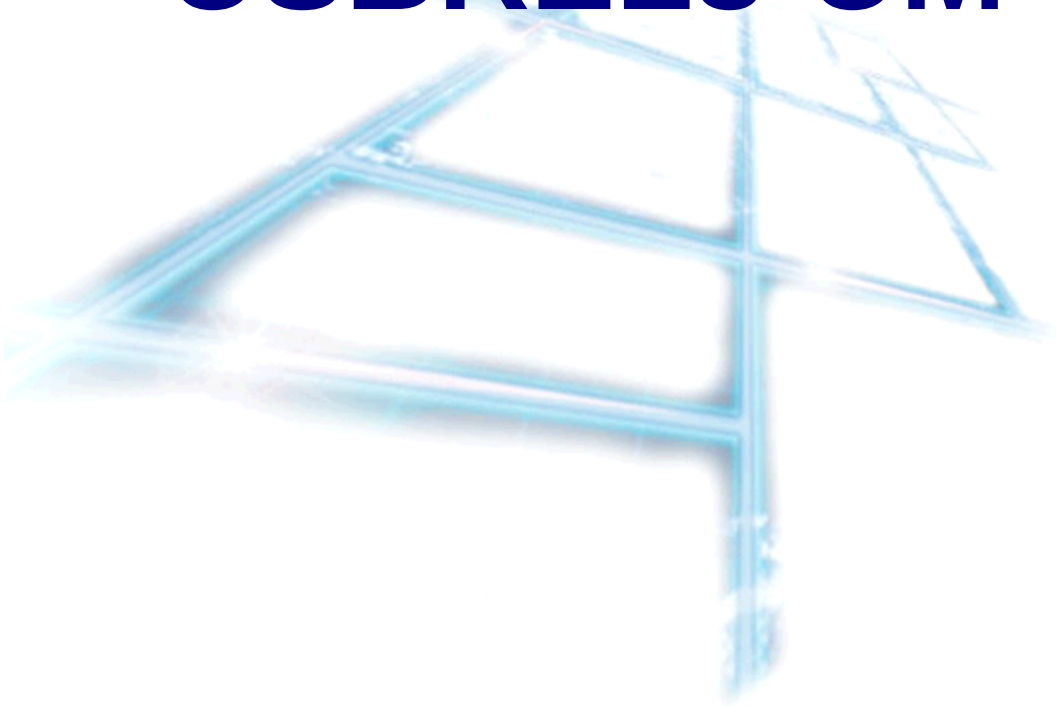
QUANCOM
INFORMATIONSSYSTEME

USBREL8 / USBOPTO8 / USBREL8-UM



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Wesseling, Dezember 2012 Version 4.3.3

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1 Overview

We congratulate you on buying the QUANCOM high quality measurement and automation board. You have chosen a product which attributes and functions show the latest updates of technology.
The following special attributes are included:

- Easy connection through USB
- Easy programming
- Various sample applications in different programming languages
- Driver support by Windows 7/Vista/XP/2000 and Me/98 with the QLIB **(QUANCOM Driver Library)**

1.1 Our experience is your profit

QUANCOM is specialised in development of hard- and software. QUANCOM has become one of the leading suppliers of measuring and automation technology in industry. At its design centres QUANCOM has developed an impressive range of products.

1.2 Customer Communication

QUANCOM wants to receive your comments on our products and manuals. We are interested in the applications you develop with our products, and we want to help you if you have problems with them. For easy contacting, this manual contains comment and configuration forms for you to complete, which are in chapter ” **Customer Communication and Help**” at the end of this manual.

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1.3 Changes in this manual and software updates

QUANCOM - products are continuously improved. You can read about all the actual information of the changes in the README-file on the installation disk or CD. You can always get more information and free software updates from our internet website.

www.quancom.de

1.4 Scope of Delivery

- Measuring and automation module
- User‘s manual
- QUANCOM CD

If a component is missing please contact your dealer. QUANCOM reserves the right to change the extent of delivery without a preliminary announcement.

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2 Installation Procedures

2.1 System Requirements

- Personal computer: The QUANCOM boards are assigned to operate in IBM-AT compatible computers with 80X86 or compatible. (i.e. Pentium)
- Your computer must have one free USB-slot

2.2 Safety Precautions

For the sake of your security and of a safe function of your new QUANCOM board mind the following advice:

- Before opening the computer please unplug it.
- Computer motherboards and components contain very sensible integrated circuit (IC) chips. You have to obey some precautions whenever you work on your computer to protect them against damage from static electricity. Use a grounded wrist strap before handling computer components. If you don't have one, touch both of your hands to a safely grounded object or to a metal object, such as the power supply case.
- Take components by the edges and try not to touch the integrated circuit chips, leads or circuitry.
- Place components on a grounded anti-static pad or on the bag that was sent with the component whenever the components are separated from the system.

Modifications of the device made without express permission of QUANCOM, lead to the loss of warranty and certification.

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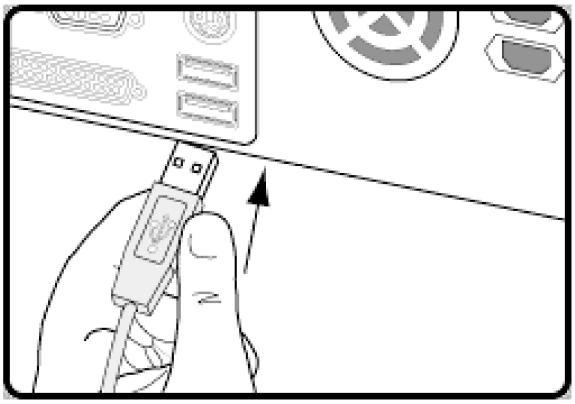
2.3 Installation of the Module

Switch on the PC, start Windows and connect the USB connection-cable with the USB port of the PC and the module.

The place where the USB port is located at your PC is described in the user-manual of your PC. The location varies from PC to PC .



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3 Technical Hardware Description

3.1 Module Information USBOPTO8, USBOPTO8/LC

- 8 optocoupler inputs for the acquisition of 12 -.30V input signals (optional 5 – 12V).
- Visual state control for all 8 inputs with 8 LED (not /LC Versions)
- Simple programming of the module with the QLIB
- Fixed (USBOPTO8/LC) or plug-able input signal-connectors.
- Connection via USB
- Power supply via USB
- Use up to 4 Modules (not /LC Versions)

3.2 Module Information USBREL8, USBREL8/LC

- 8 high-quality relays
- Visual state control for all 8 outputs with 8 LED (not USBREL8/LC).
- Simple programming of the module by using the QLIB
- Fixed (USBOPTO8/LC) or plug-able output signal-connectors.
- Connection via USB
- Power supply via USB
- Up to 4 Modules on one system (not USBREL8/LC)

3.3 Module Information USBREL8-UM

- 8 changeover relays
- 16 LEDs show the status of the outputs
- Easily program your own application by using the QLIB
- Easy connection through USB
- Up to 8 modules supported on one system
- Pluggable output channel connectors
- Power supply through 5V USB

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3.4 Description

General

All modules are powered by the USB so that no external power supplies are needed. The state of the module is shown by a LED which shows an initialisation of the driver. Simple programming of the modules is done with the support by the QLIB (Quancom driver LIBrary) which provides API-calls so that no knowledge of driver-programming is needed. You may use the QLIB for Windows XP / 2000 / ME / 98 / Agilent VEE / LabView and various programming languages.

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Mounting on DIN-rails

With the optional cases for the modules simple mounting to DIN-rails is possible. The modules may be used as stationary modules in laboratories or mobile while using a notebook.

Multiple modules usable

The USBOPTO8 and USBREL8 modules are equipped with plug-able jumpers to set-up a device-address from 0 to 3. With this address up to 4 same modules are usable and detectable by the software, so the maximum number of input and output signals raises to 32.

Additionally to the device-address the USBOPTO8 and USBREL8 provide plug-able connectors for the input and output-signals. These connectors may be removed quickly, so that a quick change of the module is possible. You can order these connectors separately to use this module with more than one set-up (useful for prototyping).

USBOPTO8/LC

Each input signal is coupled with an ac-optocoupler to protect your hardware from overvoltage or wrong polarity. Because the optocouplers are ac-optocouplers the polarity of the input-signal doesn't matter. With a plug-able resistor network the range of the input-voltage is adjustable from 12-30V to 5-12V. The input-signals are connectable through fixed C-clamps.

USBOPTO8

Additional to the properties of the USBOPTO8/LC the USBOPTO8 module shows the actual state of each input channel with a LED. The module also has plug-able C-clamps for an easy change of the module or the external inputs. With an adjustable module-address from 0 to 3 up to four modules are usable simultaneously at the USB.

USBREL8/LC

This module provides eight independent switch-able relais-outputs for loads of up to 15 W or 1A current. With a switching-time of only 1ms even quick output-changes are possible.

USBREL8

The USBREL8 in addition to the USBREL8/LC shows the state of each relais-output with a LED so you have a quick overview concerruing the states of the outputs. This module also has plug-able C-clamps to change either the module or the external loads. With the adjustable module-address from 0 to 3 up to 4 modules are usable simultaneously at the USB.

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3.5 Technical Data

3.5.1 USBOPTO8 & USBOPTO8/LC

USBOPTO8

- **Bus Type** USB
- **Module Address** Adjustable from 0 to 3
- **Inputs** 8 opto isolated (12-30V) optional 5V –12 V
- **Visualization** Driver initialization State of each input-channel
- **Connectors** plug-able C-clamps
- **CE** Yes
- **Ambient Temperature** 0...70°C

USBOPTO8/LC

- **Bus Type** USB
- **Module Address** Not adjustable
- **Inputs** 8 opto isolated (12-30V) optional 5V –12 V
- **Visualization** Driver initialization
- **Connectors** fixed C-clamps
- **CE** Yes
- **Ambient Temperature** 0...70°C

3.5.2 USBREL8 & USBREL8/LC

USBREL8

- **Bus Type** USB
- **Module Address** Adjustable from 0 - 3
- **Inputs** 8 DIL-Relais (max 15W/1A)
- **Visualization** Driver initialization
- **Connectors** Pluggable C-clamps
- **CE** Yes
- **Ambient Temperature** 0...70°C

USBREL8/LC

- **Bus Type** USB
- **Module Address** Not adjustable
- **Inputs** 8 DIL-Relais (max 15W/1A)
- **Visualization** Driver initialization
- **Connectors** Pluggable C-clamps
- **CE** Yes
- **Ambient Temperature** 0...70°C

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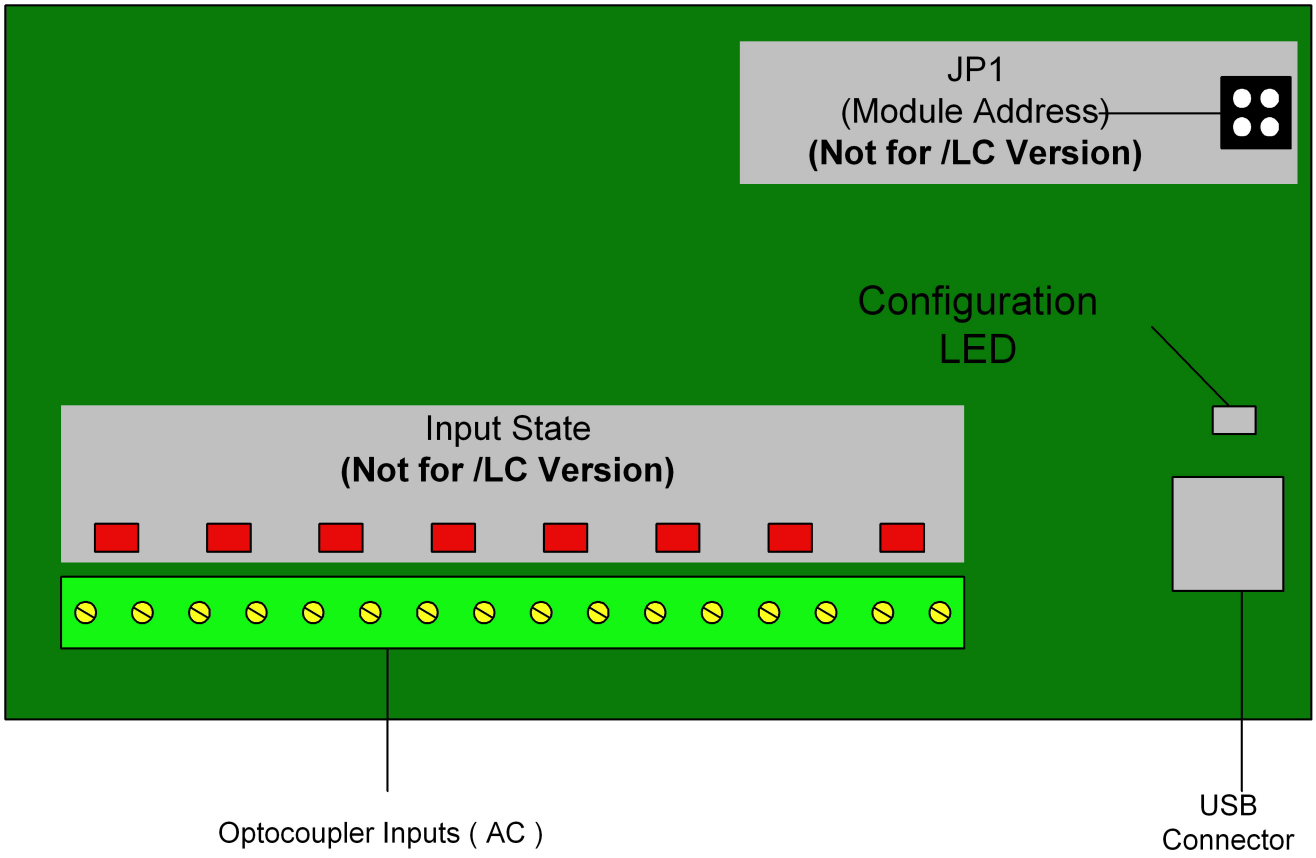
3.5.3 USBREL8-UM

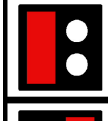
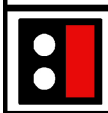
- **Bus Type** USB
- **Module Address** Adjustable from 0 - 7 through software tool
- **Outputs** 8 changeover DIL-Relais (max 10W/1A)
- **Visualization** Driver initialization & state of each output channel
- **Connectors** Pluggable C-clamps
- **CE** Yes
- **Ambient Temperature** 0...70°C

3.6 Module Overview USBOPTO8 / USBOPTO8/LC



3.6.1 Setting the Module Address (JP1)

You may use up to 4 USBOPTO8 modules in one system. To let the system identify each single module, each module has to have a unique module-address. You can set-up the module-address with JP1 as the following table shows.

JP1	Module Address
	0
	1
	2
	3

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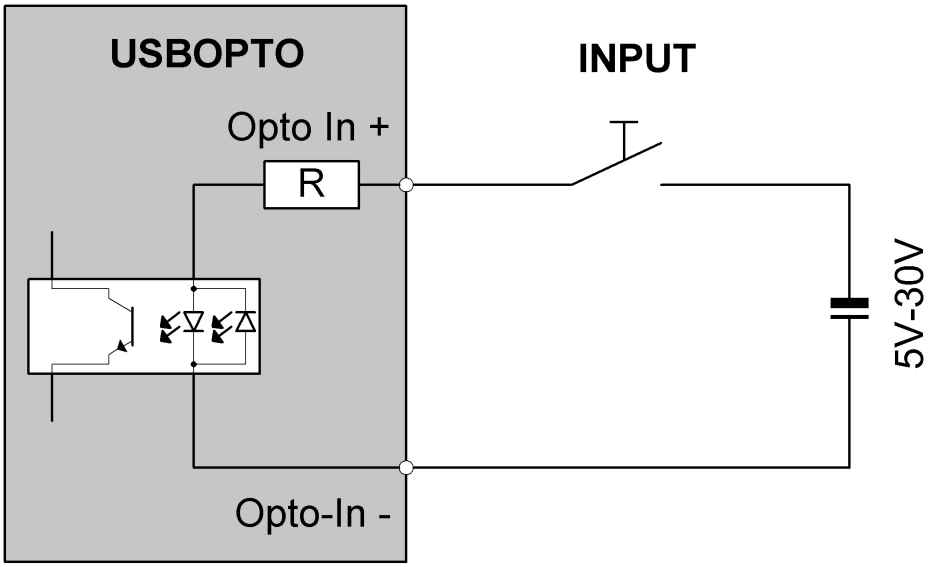
3.7 Visualizations of the USBOPTO8, USBOPTO8/LC

Each input has it's own **LED to show the actual state** of the input-signal (not for /LC Version). Additional to the status LEDs a configuration LED shows the modules initialization too. This LED blinks if the module is powered, but not initialized by the driver. After initialization, the LED is lit permanently.

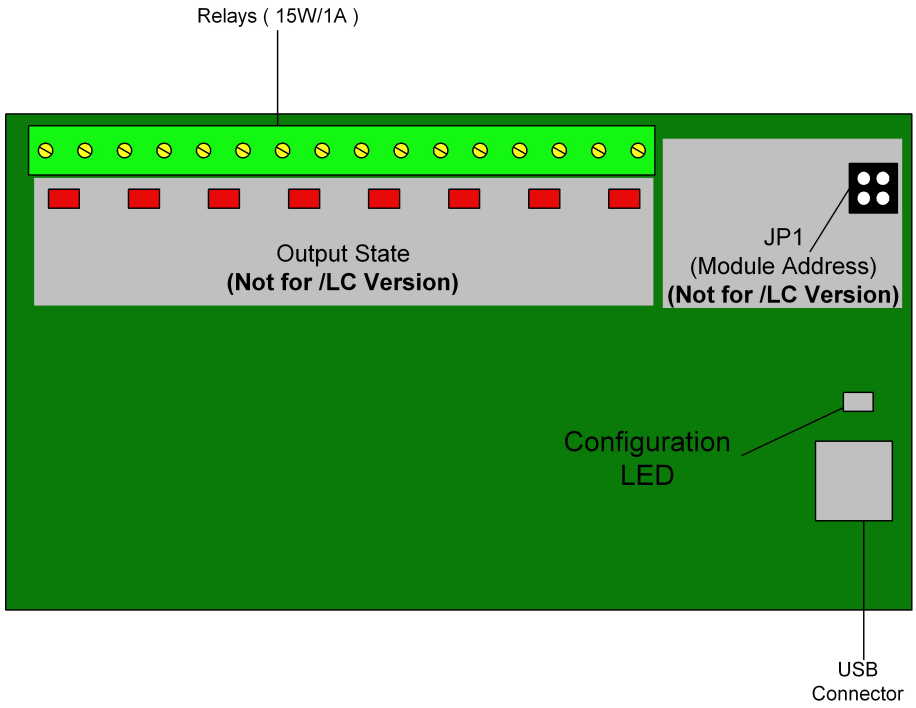
3.8 Technical Data of the Optocouplers

Maximum Input-Voltage	12-30V, 5-12V (depending to the input-resistors)
Minimum Input-Current	10mA

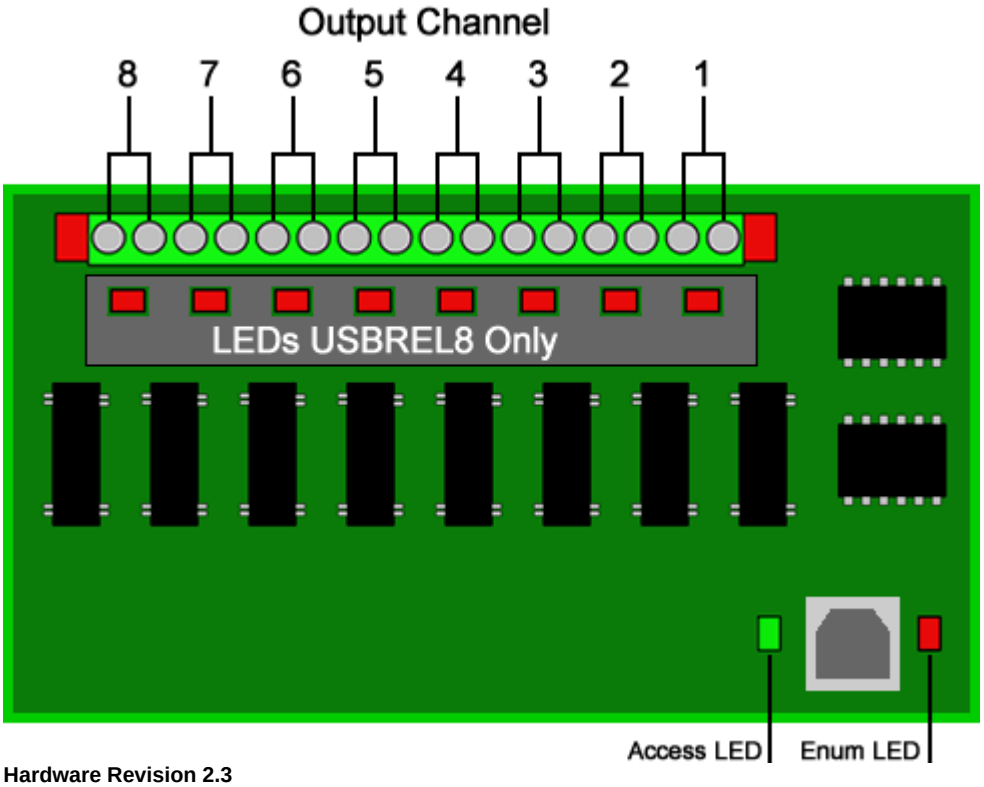
3.8.1 How to connect the Optocouplers



3.9 Module overview USBREL8 / USBREL8/LC



Hardware Revision 1.0



Hardware Revision 2.3

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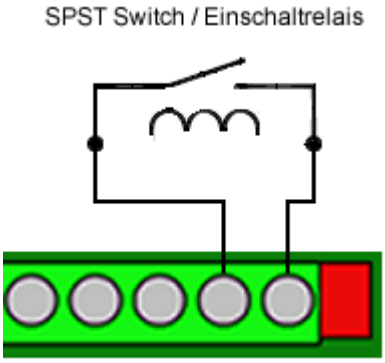
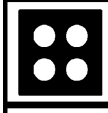
3.9.1 Connection Drawing

The following picture shows the connection of the SPST relays of the USBREL8 and USBREL8/LC.



3.9.2 Setting the Module Address (JP1)

You may use up to four USBREL8 modules in one system. To let the system identify each single module, each module has to have a unique module-address. You can set-up the module-address with JP1 as the following table shows.

JP1	Module Address
	0
	1
	2
	3

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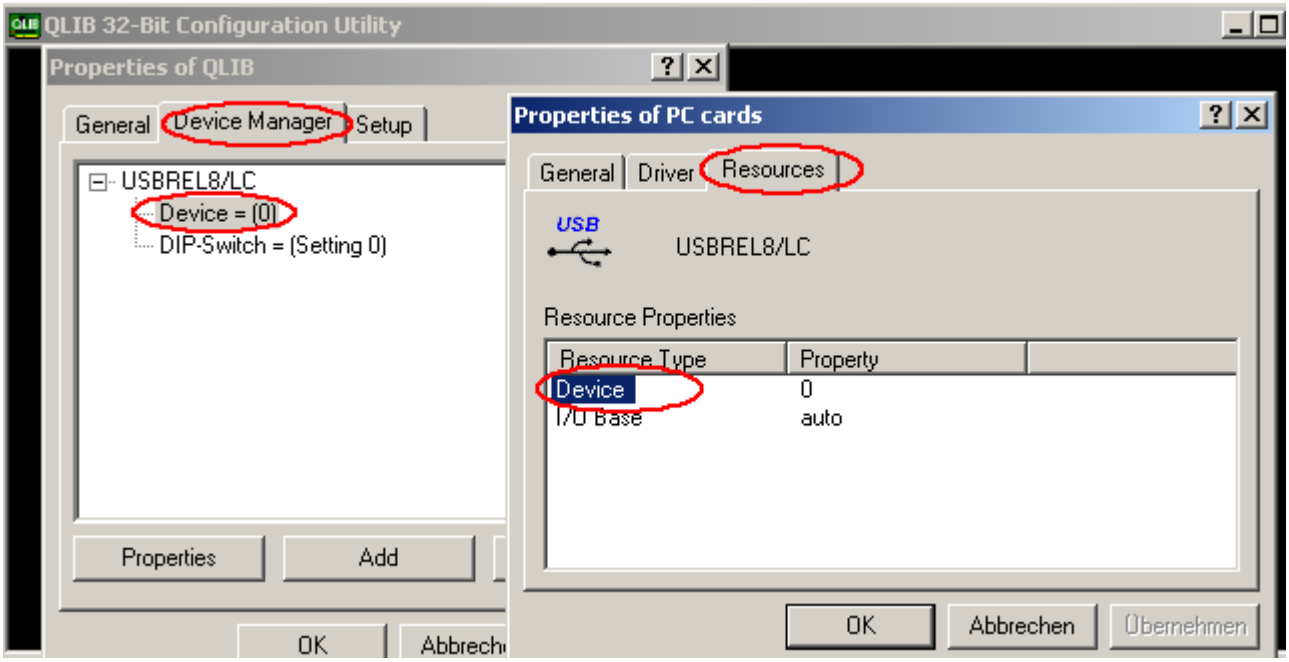
3.9.3 Configure the Module Address by Software

If using **Hardware revision 2.3** the module address has to be configured by software. The configuration is done within our QLIB Configuration Utility. To use this function a **QLIB version 2.4.525** and **Firmware Version 1.55** or higher is required.

You will find the corresponding entry in the QLIB Configuration Utility in the tab "Device Manager" on each module. You may expand the module and double click on the "Device" entry. Now the Properties of the module appear where you need to navigate to the "Ressources" tab and double click on the "Device" entry again.



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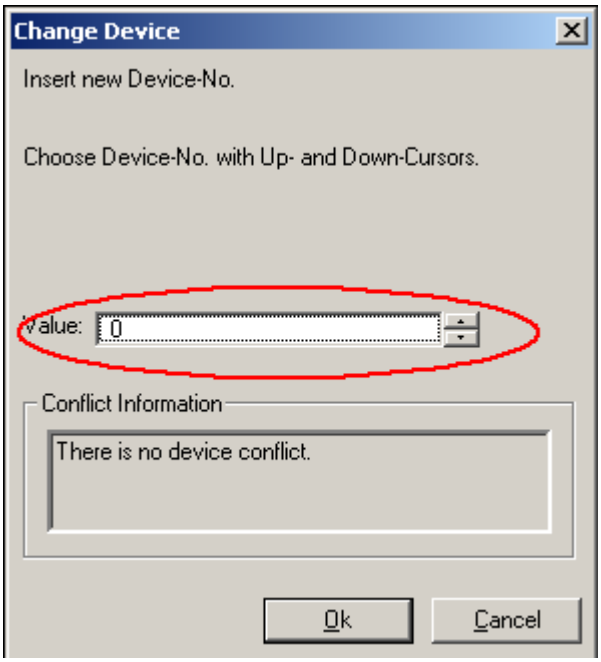
Now a new window appears where you can change the address by pressing the up- and sown arrows.



Confirm every windows by pressing the "OK" button and check the successful change of the address by reopening the QLIB Configuration Utility and check the "Dip-Switch" and "Device" values of you module.

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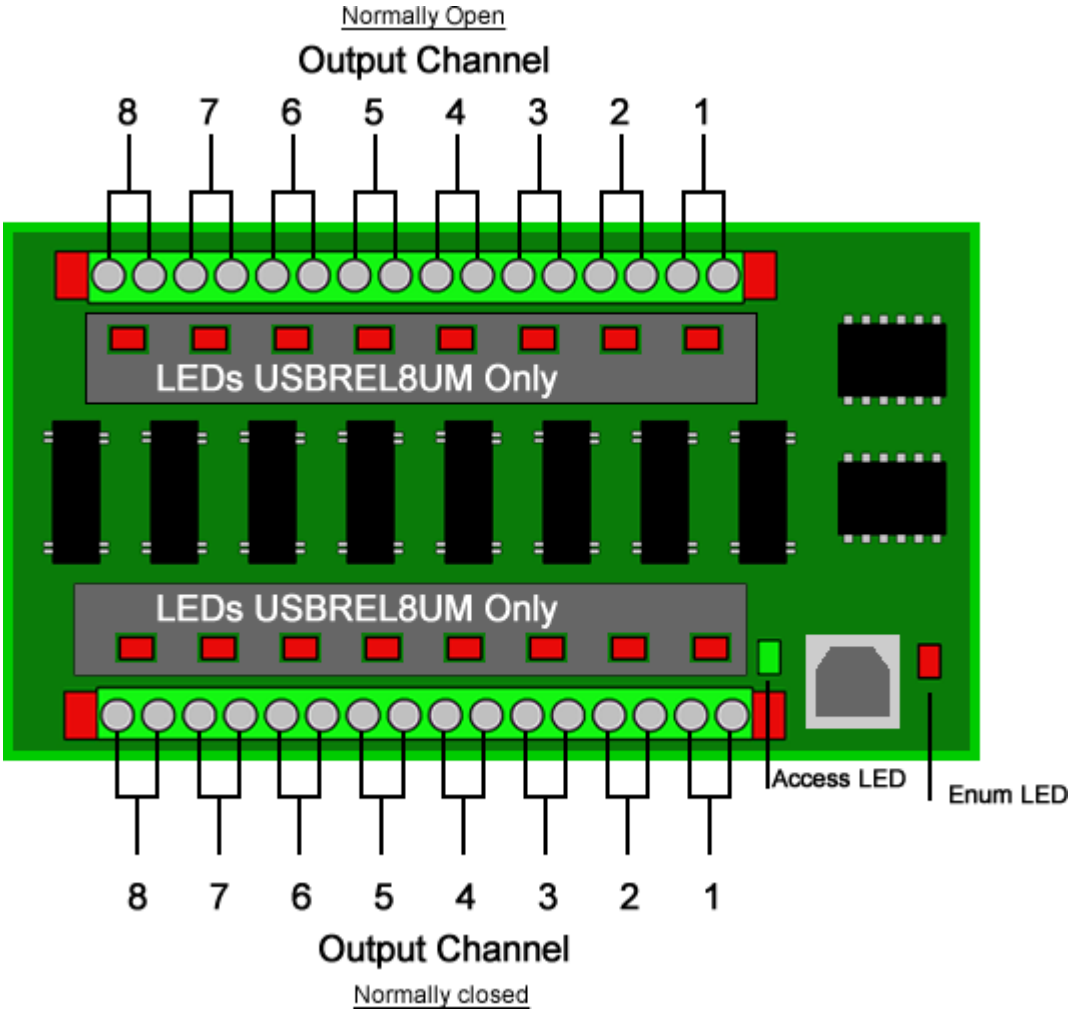
3.10 Module Overview USBREL8-UM



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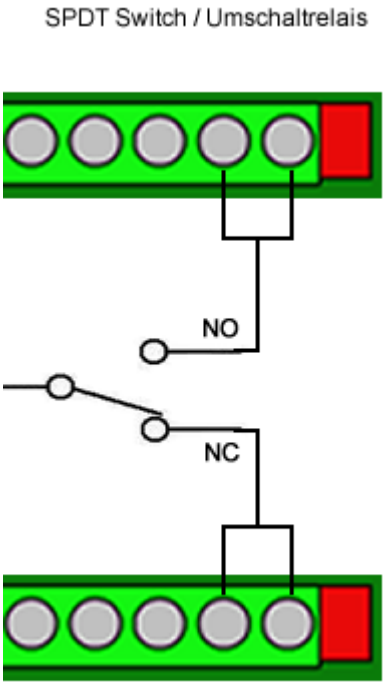
3.10.1 Connection Drawing

The following picture shows the connection of the SPDT relays of the USBREL8UM.



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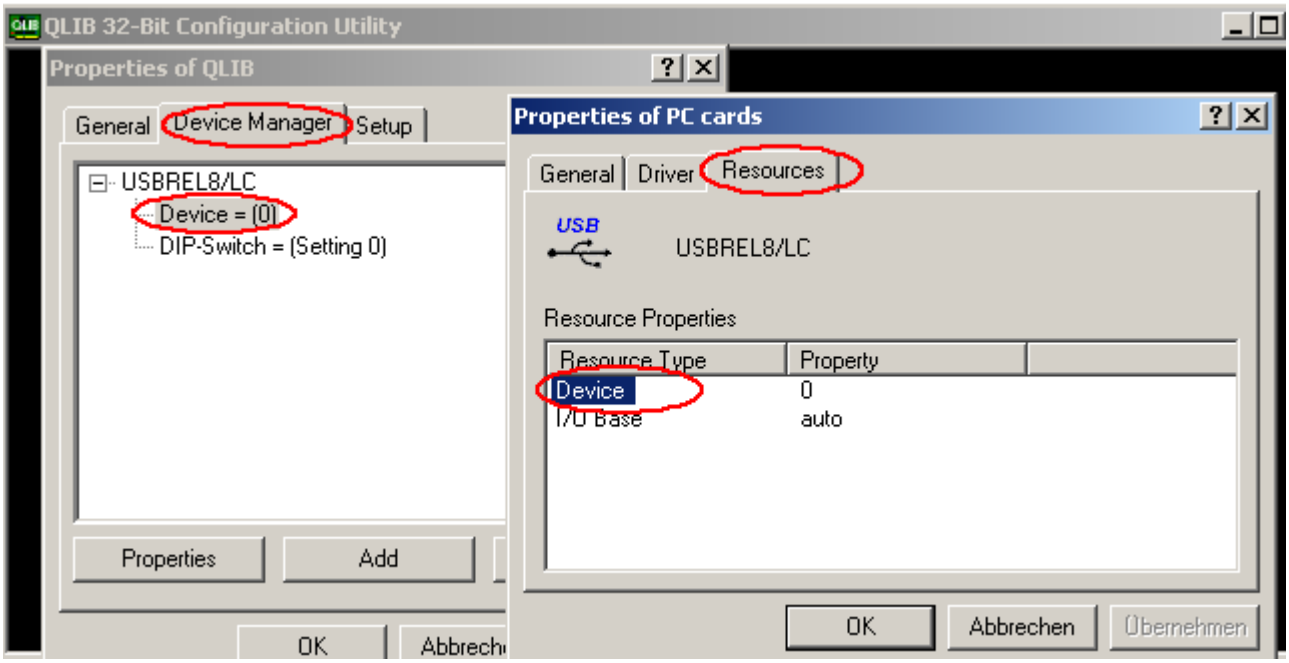
3.10.2 Configure the Module Address by Software

If using **Hardware revision 2.3** the module address has to be configured by software. The configuration is done within our QLIB Configuration Utility. To use this function a **QLIB version 2.4.525** and **Firmware Version 1.55** or higher is required.

You will find the corresponding entry in the QLIB Configuration Utility in the tab "Device Manager" on each module. You may expand the module and double click on the "Device" entry. Now the Properties of the module appear where you need to navigate to the "Ressources" tab and double click on the "Device" entry again.



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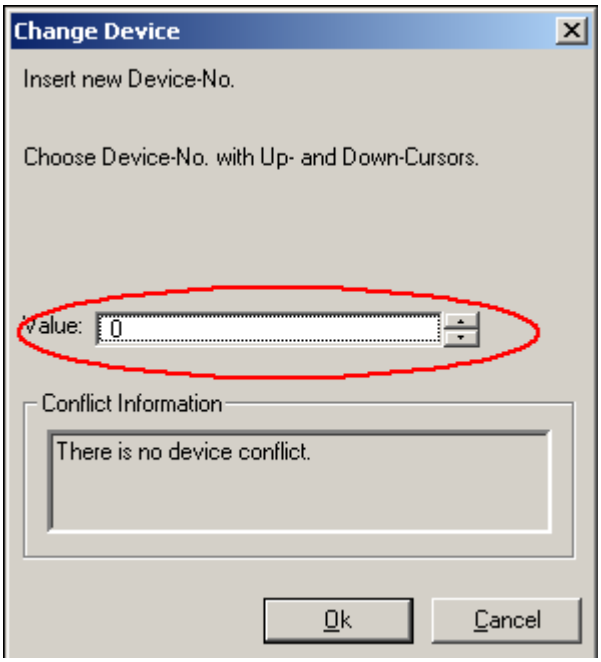
Now a new window appears where you can change the address by pressing the up- and sown arrows.



Confirm every windows by pressing the "OK" button and check the successful change of the address by reopening the QLIB Configuration Utility and check the "Dip-Switch" and "Device" values of you module.

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3.11 Visualizations of the USBREL8, USBREL8/LC

Each input has it's own **LED to show the actual state** of the input-signal (not for /LC Version). Additional to the status LEDs a configuration LED shows the modules initialization too. This LED blinks if the module is powered, but not initialized by the driver. After initialization, the LED is lit permanently.

3.12 Technical Data of the Relays

Maximum switching load	1 Ampere / 15 Watt
Maximum switching voltage	30V DC
Switching-time (with chatter)	1ms

USBREL8 and USBREL8/LC

Maximum switching load	1 Ampere / 10 Watt
Maximum switching voltage	30V DC
Switching-time (with chatter)	1ms

USBREL8-UM

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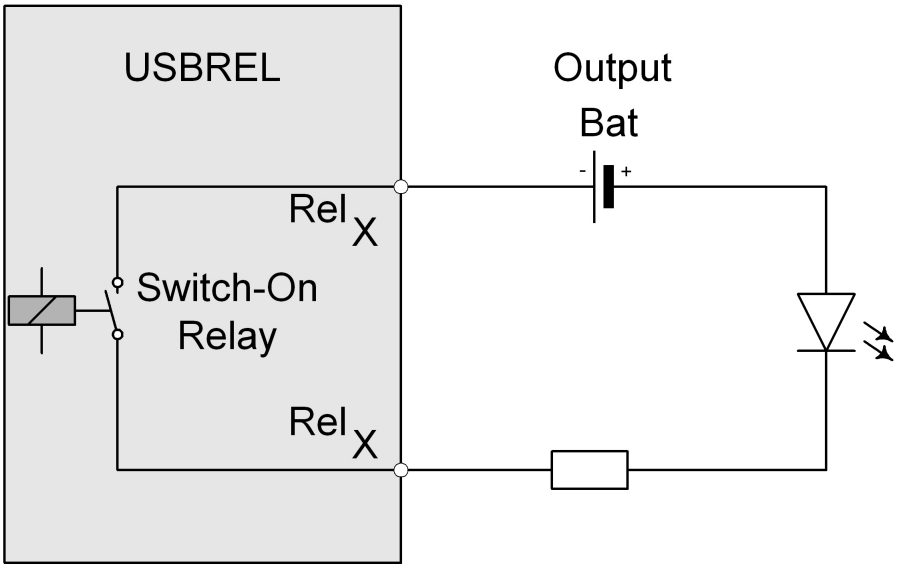
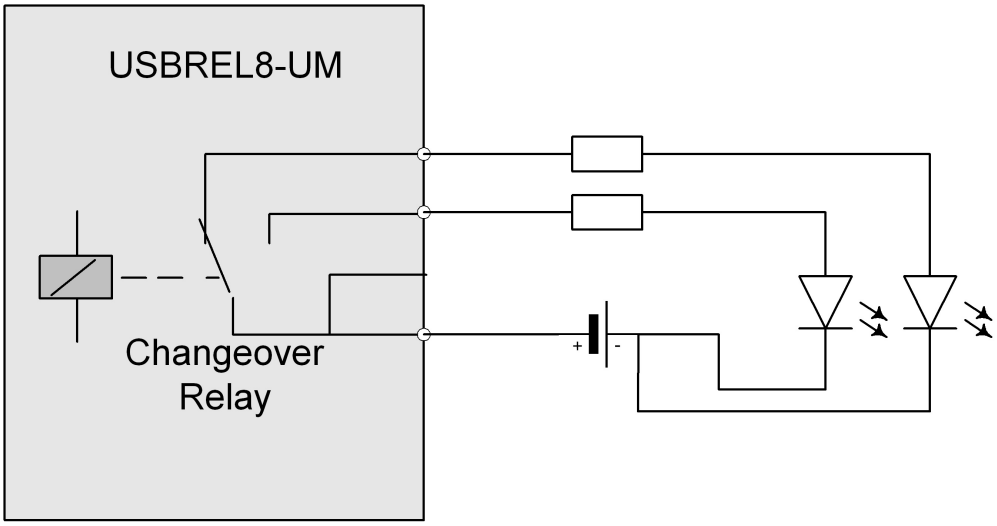
3.12.1 How to connect the Relays



USBREL8 and USBREL8/LC



USBREL8-UM

4 Software Programming with the QLIB

4.1 Software

4.1.1 Which Software to use?

The software to be use depends on the operating system being used and your application. To access the board, following possibilities exist:

- **Method 1**: Direct I/O (access the hardware registers directly **only PCI cards**)
- **Method 2**: High-Level programming (access the board through the QLIB) is possible with the following operating systems : Windows 7 / Vista / XP / 2000 / NT / ME / 98 / 95. You may program the hardware from Visual Basic, Borland Delphi, Lotus Notes and other compilers or interpreters.
- **Method 3**: Install the QLIB for use with existing software i.e. LabView from National Instruments or Agilent VEE from Agilent (see the samples-folder of the installation and the help to the QLIB for further information).

If you want to use **Method 1** and **2** you'll need the sources for the application. You are responsible for adding the programming statements inside the application. For using these methods, knowledge of programming is necessary. Chapter 4.3 "Installation and programming with the QLIB" shows how to install and use the QLIB.

Method 3 allows you to get the QUANCOM board running with existing software, i.e. LabView or Agilent VEE. The only thing you have to do in this case, is to install the QLIB Driver Libary from the Installation CD. For details on installing the QLIB see chapter 4.3 "Installation and programming with the QLIB".

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4.1.2 QLIB: High Level Programming (Windows 7 / Vista / XP / 2000 / ME / 98)

4.1.2.1 QLIB (QUANCOM Driver Library)

The **QLIB**, which stands for **QUANCOM Driver LIBrary**, was developed with the target to allow the simple programming of all our data acquisition products under various operating systems. So it is easy to write an application that runs under the operating systems Windows Me/98/95 and Windows XP/2000/NT4.0. This driver interface is not limited to PC boards or other I/O adapters but is also targeted towards supporting the next product generations currently being developed. The used functions and parameters are the same for all operating systems.

Supported operating systems:

- Microsoft Windows 7 / Vista / XP / 2000 / NT 4.0 / ME / 98 / 95 und Linux
- Windows Server 2000 / 2003 / 2008

Supported compilers:

C / C++

- Borland C++ 3.1, 4.x, 5.x
- Microsoft® Visual C++ 1.x, 2.x, 4.x, 5.x, 6.x
- Microsoft® Visual C#
- Microsoft® Visual Studio 2005 / 2008 / 2010

Pascal

- Borland Turbo Pascal

Delphi

- Borland Delphi

Basic

- Microsoft® Visual Basic 3.x, 4.x, 5.x; 6.x
- Microsoft® Visual Basic.NET

Graphical Programming Language:

- Agilent VEE® by Agilent
- LabView® by National Instruments

4.1.2.2 High-Speed Installation of the QLIB for USB

For the installation of the drivers and run time environment administrator rights are necessary. Without the appropriate rights the driver and the run time environment cannot be installed correctly.

Windows 7/Vista/XP/2000	Windows ME/98
Start your system	Start your system
After booting up insert driver CD and choose your language.	After booting up insert driver CD and choose your language.
Choose QLIB	Choose QLIB
Choose the QLIB version that correspondences to your operating system and press install	Choose the QLIB version 1.9.8s and press install
Reboot your system	Reboot your system
After booting up connect the USB measurement module to the systems USB Port. It will be recognized and installed automatically	After booting up connect the USB measurement module to the systems USB Port. It will be recognized and installed automatically

When installing the QLIB version 1.9.8s the sample sources are already included in the installation package.
If you want to install a newer version you will have to install the package for the sample projects separately. The installation package is named QLIB Samples, followed by the version number.

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5 QLIB Commands

Make sure that the QLIB (QUANCOM Driver Library) is properly installed. For further information about the installation and how to include the necessary files in your application and how to use the QLIB functions see the linked “QLIB” documentation.

Please refer the QLIB documentation on our website: http://www.quancom.de/manual/manual_english_qlib/qstart.htm

5.1 Programming with QLIB (QUANCOM Driver Library)

Make sure that the QLIB (QUANCOM Library) is installed properly and the board/module is recognized by the QLIB-configuration-tool.
The following examples describe the usage of several commands of the QLIB to gain access to the board/module.

5.1.1 Examples in C for the QLIB

The following examples show how easily the QUANCOM hardware is accessed through the QLIB.

5.1.1.1 Programming in-/outputs

The text written with bold letters is important for using the QLIB in new projects. After installation of the QLIB with examples the following sources are located inside the samples folder of the installation-path.

Example for the USBOPTO8 or USBREL8

```
// usbmodul.cpp : Sample project for the USBOPTO8 and USBREL8 Modules
//
// Author: Michael Reimer, QUANCOM Informationssysteme GmbH, Germany
//
// Website: http://www.quancom.de
// Product:
// USB OPTO I/O Module http://www.quancom.de/qprod01/eng/pb/usbopto8.htm
// USB OPTO Relay Module http://www.quancom.de/qprod01/deu/pb/usbrel8.htm
// Information:
//
// To use the QLIB Commands in your source, do the following:
//
// (1) Add statement #include "qlib.h" to your source file.
// (2) Add in the Dialog Menu->Project->Settings->C/C++->Preprocessor
// "$(QLIB_INC)" to the additional include directories entry.
// (3) Add in the Dialog Menu->Project->Settings->Linker->General
// "$(QLIB_LIB)\qlib32.lib" to the additional library and object
// modules directories entry.

#include "stdafx.h"
#include "windows.h"
#include "qlib.h"
#include <conio.h>
#include <stdio.h>
```

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```
#define OUT1   0x1
#define OUT2   0x2
#define OUT3   0x4
#define OUT4   0x8
#define OUT5   0x10
#define OUT6   0x20
#define OUT7   0x40
#define OUT8   0x80
int main(int argc, char* argv[])
{
   ULONG handle;
   char ch;
   char relmod=1;

   //
   // Open the USB Module (USBOPTO8 or USBREL8 )
   //
   handle = QAPIExtOpenCard(USBREL8,0);
   if ( handle == 0 ) {
      handle = QAPIExtOpenCard(USBOPTO8,0);
      relmod=0;
   }

   //
   // If there are no usb modules terminate application
   //
   if ( handle == 0 ) {
      MessageBox(NULL, "No USB Modules found!","Error", MB_OK);
      return FALSE;
   }

// Ok, we found a QUANCOM USB Module

if (relmod) {
   // ------------------------------------------------------------------------
   // PART 1: Setting the outputs
   // ------------------------------------------------------------------------
   ULONG lines = 0;

   //
   // Reset all lines to "Low"
   //
   printf("Reset all lines to 'Low' ( Press return to continue ):\n");
   QAPIExtWriteDO8(handle, 0, lines, 0);
   ch = getchar();

   //
   // Set the outputs OUT2,OUT4 and OUT7 to "High" ( 8-Bit )
   //
   printf("Set OUT2,OUT4 and OUT7 to 'High' ( Press return to continue ):\n");
   lines = OUT2 + OUT4 + OUT7;
   QAPIExtWriteDO16(handle, 0, lines, 0);
   ch = getchar();
   //
   // Set the output OUT1, OUT3 and OUT5 to "High" ( 16-Bit )
   //
   printf("Set OUT1, OUT3 and OUT5 to 'High' ( Press return to continue ):\n");

   lines = OUT1 + OUT3 + OUT5;
   QAPIExtWriteDO8(handle, 0, lines, 0);
   ch = getchar();

   //
   // Reset line OUT3 to "Low"
   //
   printf("Reset line OUT3 to 'Low' ( Press return to continue ):\n");
   QAPIExtWriteDO1(handle, 3 - 1, FALSE, 0);
   ch = getchar();

   //
   // Set line OUT3 to "High"
   //
   printf("Set line OUT3 to 'High' ( Press return to continue ):\n");
   QAPIExtWriteDO1(handle, 3 - 1, TRUE, 0);
   ch = getchar();

   //
   // Reset all lines to "Low"
   //
   printf("Reset all to 'Low' ( Press return to continue ):\n");
   lines = 0;
   QAPIExtWriteDO8(handle, 0, lines, 0);
```


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```
   ch = getchar();

} else {

   // ------------------------------------------------------------------------
   // PART 2: Reading the inputs
   //
   // This part reads the state of the input lines.
   // ------------------------------------------------------------------------
   int i;
   while (!kbhit()) {
      // read the current state from the inputs
      lines = QAPIExtReadDI16(handle, 0, 0);
      printf("\n--------------------------------------\n");
      printf("Current input states\n");
      printf("IN1  IN2  IN3  IN4  IN5  IN6  IN7  IN8\n");
      for (i=0;i<7;i++) {
         if ( lines & 1<<i) {
            printf(" 1   ");
         } else {
            printf(" 0   ");
         }
      }
      printf("\n--------------------------------------\n");
      printf("Press return to stop reading the inputs every 5 seconds ...\n");
      for (int j=0;(j<10) && !kbhit();j++) {
         Sleep(500);
      }
   }
   ch = getchar();
}
      QAPIExtCloseCard(handle);

      return 0;
}
```

5.1.1.2 Accessing the Relais with the QLIB in C/C++

Example for accessing the relais

```
#include <windows.h>
#include <stdio.h>
#include <conio.h>

#include "qlib.h"

/*=====================
Main program
=====================*/

void main () {
   ULONG handle;   /*Handle of the USBREL8*/

   if ((handle=QAPIExtOpenCard(USBREL8,0L)) == 0L) {
      printf("Couldn´t open USBREL8 \n");
      return;
   }

   for (;;) {
        if (kbhit() != 0 && getch() == 27) break;

      QAPIExtWriteDO8(handle,0L,0x00L,0L);
      Sleep(500);
      QAPIExtWriteDO8(handle,0L,0xFFL,0L);
      Sleep(500);
      QAPIExtWriteDO8(handle,0L,0x55L,0L);
      Sleep(500);
      QAPIExtWriteDO8(handle,0L,0xAAL,0L);
      Sleep(500);
   }

   QAPIExtCloseCard(handle);

}
```


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5.1.1.3 Reading the Optocoupler Inputs with the QLIB in C/C++

Example for reading the state of the optocouplers

```
#include <windows.h>
#include <stdio.h>
#include <conio.h>

#include ”qlib.h"


/*=====================
Main program
=====================*/

void main () {
   ULONG handle;   /* Handle of the USBOPTO8 */

   if ((handle = QAPIExtOpenCard(USBOPTO8,0L)) == 0L) {
      printf("Couldn’t open USBOPTO8 \n");
      return;
   }

   for (;;) {
      if (kbhit() != 0 && getch() == 27) break;

      printf("%02lx\n",QAPIExtReadDI8(handle,0L,0L));
      Sleep(500);
      printf("%02lx\n",QAPIExtReadDI8(handle,0L,0L));
      Sleep(500);
      printf("%02lx\n",QAPIExtReadDI8(handle,0L,0L));
      Sleep(500);
      printf("%02lx\n",QAPIExtReadDI8(handle,0L,0L));
      Sleep(500);
   }

   QAPIExtCloseCard(handle);
}
```

5.1.2 Borland Delphi Examples

The text written in bold letters describes how to include the QLIB to a Delphi-project.

After installation of the QLIB with examples the following sources are located inside the *samples* folder of the installation-path.

5.1.2.1 Programming the in-/outputs.

Example for the USBOPTO8 or USBREL8

```
program USBOPTO_CONSOLE_APP;

uses
   WinProcs;
{*
// usbopto.pas : Sample project for the USBOPTO8 and USBREL8 Modules
//
// Author: Michael Reimer, QUANCOM Informationssysteme GmbH, Germany
//
// Website: http://www.quancom.de
// Product:
// USB OPTO I/O Module http://www.quancom.de/qprod01/eng/pb/usbopto8.htm
// USB OPTO Relay Module http://www.quancom.de/qprod01/deu/pb/usbrel8.htm
// Information:
//
// To use the QLIB Commands in your source, do the following:
//
// (1) Add statement #include "qlib.pas" to your source file.
// (2) Copy QLIB.PAS from QLIB Installation Directory
//     d:\program files\quancom\qlib32\include to your
//     working directory
*}
function KeyPressed: Boolean;
var
 Buffer: TInputRecord;
 Data: DWORD;
 hIn: DWORD;

begin
 hIn := GetStdHandle( STD_INPUT_HANDLE );
 Result := False;
 PeekConsoleInput(hIn, Buffer, 1, Data);
 if Data <> 0 then
   if Buffer.EventType = Key_Event then
       begin
            Result := True;
       end;

 FlushConsoleInputBuffer(hIn)

end;

{$APPTYPE CONSOLE}

{$INCLUDE QLIB.pas}

{$X+}


const OUT1 = $1;
      OUT2 = $2;
      OUT3 = $4;
      OUT4 = $8;
      OUT5 = $10;
      OUT6 = $20;
      OUT7 = $40;
      OUT8 = $80;

var handle: longint;
    status: longint;
    relmod: integer;
    lines: longint;
    s: string;
```


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```
    i: integer;
    j: integer;

Label lab1, lab2;

begin
{*
//
// Open the USB Module
//
*}

relmod := 1;
handle := QAPIExtOpenCard(USBREL8,0);
if ( handle = 0 ) then
   begin
   handle := QAPIExtOpenCard(USBOPTO8,0);
   relmod := 0;
   end;

{*
// The handle is <> NULL if there is a USB Module installed
*}

if ( handle = 0 ) then
   begin
       s := 'No QUANCOM USB Module found!';
       writeln(s);
       halt(0);
   end;

{*
// Ok, we found a QUANCOM USB Module
// ------------------------------------------------------------------------
// PART 1: Setting the outputs
//
// The following constants can be used to program the outputs:
// ------------------------------------------------------------------------
*}

{*
//
// Reset all lines to "Low"
//
*}
if ( relmod = 1 ) then
 begin
  lines := 0;
  writeln('Reset all lines to Low ( Press return to continue ):');
  QAPIExtWriteDO8(handle, 0, lines, 0);
  Readln;

  {*
  //
  // Set the outputs OUT2,OUT4 and OUT7 to "High" ( 8-Bit )
  //
  *}

  writeln('Set OUT2,OUT4 and OUT7 to High ( Press return to continue ):');
  lines := OUT2 + OUT4 + OUT7;
 QAPIExtWriteDO8(handle, 0, lines, 0);
 Readln;

{*
//
// Set the output OUT1, OUT3 and OUT5 to "High" (8-Bit )
//
*}
 writeln('Set OUT1, OUT3 and OUT5 to High ( Press return to continue ):');
 lines := OUT1 + OUT3 + OUT5;
 QAPIExtWriteDO8(handle, 0, lines, 0);
 Readln;

{*
//
// Reset line OUT5 to "Low"
//
*}
 writeln('Reset line OUT5 to Low ( Press return to continue ):');
```

```
 QAPIExtWriteDO1(handle, 5 - 1, 0, 0);
 Readln;

{*
//
// Set line OUT5 to "High"
//
*}

 writeln('Set line OUT5 to High ( Press return to continue ):');
 QAPIExtWriteDO1(handle, 5 - 1, 1, 0);
 Readln;

{*
//
// Reset all lines to "Low"
//
*}
 writeln('Reset all to Low ( Press return to continue ):');
 lines := 0;
 QAPIExtWriteDO8(handle, 0, lines, 0);
 Readln;
end;




else
begin
{*
// ------------------------------------------------------------------------
// PART 2: Reading the inputs ( and detect changed inputs )
//
// This part reads the state of the input lines.
// ------------------------------------------------------------------------
*}

  while Not KeyPressed do
    begin
      {*
      // read the current state from the inputs
      *}
      lines := QAPIExtReadDI8(handle, 0, 0);
      write(#13#10'--------------------------------------'#13#10);
      write('Current input states'#13#10);
      write('IN1  IN2  IN3  IN4  IN5  IN6  IN7  IN8'#13#10);
      for i:=0 to 7 do
          begin
          if lines AND ( 1 shl i)  <> 0 then
              begin
                   write(' 1   ');
              end
          else
              begin
                   write(' 0   ');
              end
          end;

      write(#13#10'--------------------------------------'#13#10);
      write('Press return to stop reading the inputs every 5 seconds ..'#13#10);

      for j:=0 to 10 do
        begin
          Sleep(500);
          If KeyPressed then
              goto lab1;
        end;
    end;
  end;

lab1:
 writeln(#13#10'Ready ! Press a key to continue !');
 ReadLn;
 QAPIExtCloseCard(handle);
```


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```
end .
```

6.1 Frequently asked Questions

- **How can I identify my board/card when using more than one of the same type in a system?**

  • Most of our modules and cards may be configured using the onboard dip switch, please see the corresponding manual for more information.

  • If there is nor dip switch on your board, the address may be configured software sided by using our addressing tool which can be downloaded here --> http://www.quancom.de/qprod01/eng/files/download.adress_changer.zip/$file/Adress_Changer.zip.

- **What is the maximum frequency of QUANCOM USB modules when using the QLIB?**

  • One function call out of the QLIB takes about 2ms - 4ms, which results in a frequency of 500Hz to 250Hz.

  • The frequency always depends on the current free system capacity.

- **How am I able to read back the status of the outputs?**

  • Use the QLIB function QAPIExtSpecial with the jobcode JOB_READ_BACK_RELAYS

- **Why is the ”Control Panel” board configuration dialog ”QLIB” empty?**

  • There is no QUANCOM PCI or USB board in the system.

  • There are no drivers installed for a QUANCOM ISA board.

- **I get the message ”QLIBNDRV.SYS not found ”or ”QLIBNDRV.VXD not found” after installation. What can I do?**

  • Check that the QLIB is installed properly. For further information about the installation process and the general programming with the QLIB please see the “QLIB” manual which is included on the installation CD.

  • If you use a QUANCOM ISA board check if the drivers for the QUANCOM board are installed.

- **Why do I get the message "Driver QLIBNDRV.SYS” or ”Driver QLIBNDRV.VXD” could not be loaded?**

  • Check that the QLIB is installed properly. For further information about the installation process and the

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general programming with the QLIB please read the “QLIB” manual which is included on the installation CD.

- The driver for the QUANCOM board was not loaded. (Control Panel => System)

- **Windows 7/Vista/XP/2000/NT: Does the QLIB have to be installed with administrative privileges?**
  - The QLIB always has to be installed with administrative privileges.

- **Windows 7/Vista/XP/2000/NT: Why do I get the message ”Driver could not be installed” during the installation?**
  - Installation was made without administrative privileges
  - The Installation media is corrupt

- **Windows 7/Vista/XP/2000/NT: Why do I get the message "Driver QLIBNDRV.SYS could not be loaded” ?**
  - The driver’s installation has failed, because the QLIB was not installed with administrative privileges
  - QLIB-Software was installed on a network drive. Always install the QLIB on a local drive.

- **Windows 7/Vista/XP/2000/NT: How can I manually install the driver QLIBNDRV.SYS?**

If the QLIBNDRV.SYS failed to install, it may be necessary to install the driver manually.

Please take the following steps to install the driver manually:

- Search on the installation CD ”Tools” for the tool instdrv.exe in the directory. With this tool you can install and de-install the driver manually.

- Please call this tool with the following command line parameters:

instdrv libndrv d:\directory\qlibndrv.sys .
(Replace d:\directory with the drive, where the driver qlibndrv.sys is located.)

- Go to ”Start -> Settings ->Control panel ->(Administrative Tools / Windows 2000 only) -> Drivers” change the start type to ”Automatic”, then click on the ”Start” button. Please restart the system for the changes to become active.

- Why do I have to restart the driver after every reboot?

The starting type of the driver is set to ”Manual”. If you wanted to you are able change this setting on “Automatic” to start the driver on every reboot of the system.

6.2 Customer Communication and Help

Do you need help?

If you don't know how to go on during the installation or operation of your QUANCOM board please consult this user's guide first.

! Tip !

In the chapter "Frequently asked question" there are a lot of answers to questions for known problems. They may help you to solve your problems. You can find an ASCII – text – file README.TXT, which includes changes made after printing of this user's manual on the QUANCOM installation CD.

! Important !

If you have further questions please contact our support team. For this case please prepare the following information:

- Exact type of the board.
- Version of the driver
- Version of the QLIB
- Operating system, hardware equipment and bus - system
- Name and version of the program, which reports the failure
- A detailed failure description. To make sure, please try to reproduce the failure, and describe exactly, which steps led to this failure.

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Contact ?

The QUANCOM internet website
www.quancom.de

Per Fax
+49 22 36 / 89 92 - 49

Per E-Mail:
support@quancom.de

Address:
QUANCOM INFORMATIONSSYSTEME GmbH
In der Flecht 14
50389 Wesseling
Germany

Quancom Hotline Germany:
0 22 36 / 89 92 - 20

Monday - Thursday
9:00 - 18:00
Friday
9:00 - 17:00

Actual drivers

You can find the latest version of QUANCOM software on our internet website **www.quancom.de**. You can also find a lot of information and “Frequently asked questions (FAQ’s)” there., please check if you are using the latest software version of the QUANCOM software before contacting the QUANCOM support.

Reparatur

If you are not sure whether your QUANCOM board is defective please call the QUANCOM Hotline:

Tel.: **+49 22 36 / 89 92 – 20**

Before sending us the QUANCOM board to be repaired call:

Tel.: **+49 22 36 / 89 92 – 20**

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If you send your QUANCOM board to us, please use original package or any other suitable package, to protect the contents against transport damage. You also need to send us a copy of the original bill and the RMA number.

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6.3 Technical Support Form

If you have internet access please enter the following URL in your browser:
http://www.quancom.de/quancom/qshop.nsf/techniksupport?OpenForm&deu
else optocopy this form and use the copy of this form as a reference for your current configuration. Complete this form before contacting QUANCOM Informationssysteme GmbH for technical support help and our applications engineers may answer your questions more efficiently. If you are using any other QUANCOM hardware or software products please add them to this configuration form. Include additional pages if necessary.

Name: _____
Company: _____
Address: _____
Phone: _____
Fax: _____
Computer brand / Processor: _____
Operate system: _____
Display adapter: _____
Mouse: _____
QUANCOM board _____
Other adapters installed: _____
Hard disk (capacity, free): _____
The Problem is: _____
List any error messages: _____
_____
_____

The following steps will reproduce the problem:

_____
_____
_____
_____
_____

6.4 Feedback Form

QUANCOM Informationsysteme GmbH would like you to comment on the documentation supplied with our products. This information helps us to provide you with quality products to meet your needs. Include additional pages if necessary.

Titel: USBREL8 / USBOPTO8 / USBREL8-UM

Erstellungsdatum: 13.12.2012

Name: _____
Company: _____
Address: _____
Phone: _____
Fax: _____
Comment: _____
_____
_____
_____
_____

Mail to: **support@quancom.de**

Fax to: **+49 2236 89 92 49**

Address: **QUANCOM Informationssysteme GmbH**
In der Flecht 14
50389 Wesseling
Germany

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6.5 Hard- and Software Configuration Form

This form allows you to record the settings of your hardware and software. Complete this form each time you revise your software or hardware configuration, and use this form as a reference for your current configuration. Completing this form accurately before contacting QUANCOM Informationssysteme GmbH for technical support helps our application engineers answer your questions more efficiently.

- **QUANCOM Product:**

Name / Name of board _____

Interrupt Level _____

DMA Channel _____

Basis I/O Address _____

Operate system _____

- **Other Information**

Computer Model _____

Processor _____

Clock Frequency _____

Type of Video board installed _____

DOS Version _____

Programming Language _____

Programming Language Version _____

- **Other Boards in System**

Basis I/O-Address of other boards _____

DMA Channels of other boards _____

Interrupt Level of other Cards _____

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